CLAIMS

1. A continuously cast aluminum alloy rod produced through a horizontal continuous casting process employing a tubular mold which is supported such that its center axis extends substantially horizontally and which has a forced cooling means, said rod comprising a Si-rich portion having a thickness of at least 20 μm on a surface of a lateral side of the rod that has a central angle of at least 30°.

2. The continuously cast aluminum alloy rod according to claim 1, wherein the Si-rich portion has a Si microstructure containing primary α-Al crystals whose percentage area is less than 50% as determined in a micro-crystallographic image obtained from a radial cross section of the rod.

3. The continuously cast aluminum alloy rod according to claim 2, wherein the Si microstructure contains Si grains having an average grain size of 0.1 to 5 μm.

4. The continuously cast aluminum alloy rod according to any one of claims 1 to 3, wherein it contains Si in an amount of 7 to 14 mass%.

5. The continuously cast aluminum alloy rod according to any one of claims 1 to 4, wherein it contains Ca in an amount of at least 0.003 mass%.

6. The continuously cast aluminum alloy rod according to any one of claims 1 to 5, wherein it has a surface roughness Rmax of 50 μm or less and, when being subjected to peeling after casting, has no tool mark on the surface thereof.

7. A method for producing a continuously cast aluminum alloy rod using a tubular mold which is supported such that its center axis extends substantially horizontally and which has a forced cooling means, said method comprising controlling a difference between a temperature of a molten aluminum alloy being teemed into the tubular mold and a solidification temperature thereof and casting a rod to form an Si-rich portion having a thickness of at least 20 μm on a surface of a lateral side of the rod having a central angle of at least 30°.

8. The method for producing a continuously cast aluminum alloy rod according to claim 7, further comprising controlling a speed of removing the rod from the tubular mold.

9. The method for producing a continuously cast aluminum alloy rod according to claim 7 or 8, further comprising employing as a raw material a molten aluminum alloy containing Si in an amount of 7 to 14 mass% and Ca in an amount of at least 0.003 mass%, regulating a casting speed to be 200 to 1,500 mm/min and the temperature of the molten aluminum alloy to be equal to or higher than a liquidus

temperature of the alloy and using as the tubular mold a mold made of a material that is one species or a combination of two or more species selected from among aluminum, copper, and alloys thereof and having an effective mold length of 15 to 70 mm.

10. The method for producing a continuously cast aluminum alloy rod according to claim 9, wherein the molten aluminum alloy is added with Ca in an amount of at least 0.003 mass%.

11. The method for producing a continuously cast aluminum alloy rod according to claim 10, wherein the Ca is metallic Ca having a purity of at least 99.9 mass%.

12. The method for producing a continuously cast aluminum alloy rod according to any one of claims 8 to 11, wherein the tubular mold includes, on its inner wall which comes into contact with the molten aluminum alloy, a ring-shaped permeable porous member having an air permeability of 0.005 to 0.03 $L/(cm^2 \times min)$.

13. The method for producing a continuously cast aluminum alloy rod according to claim 12, wherein the permeable porous member is provided within a range of 5 to 15 mm of the effective mold length.

14. An apparatus for producing a continuously cast aluminum alloy rod, comprising a melting furnace 502 which reserves therein molten aluminum alloy and from which the molten aluminum alloy is fed; a casting section 504 which is provided with a cylindrical mold 201 and a cooling means 202 and at which the molten aluminum alloy is cast into a solidified cast ingot; a removal drive section 505 at which the solidified cast ingot is removed substantially horizontally from the cylindrical mold to form a continuously cast aluminum alloy rod 101 having a Si-rich portion 104; a detection section 506 at which a region of the Si-rich portion is detected and from which detected signals are output; a determination section 508 at which the detected signals are compared with preset determination conditions and from which determination signals are output; and a control unit 509 that controls a temperature of the molten aluminum alloy in the melting furnace, the cooling means of the casting section and a removing speed of the removal drive section so that the detected signals fall within the preset determination conditions based on the determination signals.

15. The apparatus for producing a continuously cast aluminum alloy rod according to claim 14, further comprising a Ca introducing section 503 that is controlled by means of the control unit 509 so that the detected signals fall within the preset determination conditions based on the determination signals.

16. The apparatus for producing a continuously cast aluminum alloy rod according to claim 15, further comprising an analysis section 507 at which a composition of the molten aluminum alloy is analyzed and which outputs Ca amount measurement data signals based on analyzed results to the determination section 508, and the control unit 509 controls the Ca introducing section 503 so that a Ca amount falls within the preset determination conditions based on the determination signals from the determination section.